

heats rapidly and the lower layers slowly, but during the night-time the whole mass cools more uniformly. On the average of ten years the surface temperature in the tank, namely, the average of the 7 a. m. and the 7 p. m., is as follows:

April.....	49.0
May.....	58.9
June.....	67.9
July.....	72.7
August.....	70.8
September.....	63.4
October.....	51.2
November.....	41.6

During the other months of the year the tank, of course, is frozen.

The temperature of the free water in Lake Lee, at the surface and at the bottom 6 feet below, as also the temperature of the water in a small tank floating at the surface of Lake Lee, was read every fifteen minutes on August 6, 1896. Lake Lee is a small reservoir 4 miles from the college, shallow, exposed to the wind, and full of weeds that greatly hinder the formation of waves. The following is the temperature record:

Time of observation.	Clouds, tenths.	Wind.	Temperature of water.		
			Tank.	Lake.	
				Surface.	Bottom.
9:00 a. m.			71.0	70.2	68.8
9:15 a. m.	Few.		72.0	70.5	68.2
9:30 a. m.	Few.	Lt. SE.	72.0	70.7	68.0
9:45 a. m.	Few.	Lt. SE.	72.0	71.2	67.7
10:00 a. m.	Few.	E.	72.0	71.0	68.0
10:15 a. m.	1		72.8	71.7	68.8
10:30 a. m.	1	Lt. SE.	73.7	72.3	69.0
10:45 a. m.	2	Lt. SE.	74.0	72.9	68.6
11:00 a. m.	2	Lt. SE.	74.0	73.0	68.5
11:15 a. m.	3	Lt. SE.	74.0	73.0	68.2
11:30 a. m.	3	Lt. SE.	73.2	72.9	68.5
11:45 a. m.	3	Lt. SE.	74.0	73.1	69.1
12:00 noon	2	Lt. SE.	74.2	73.2	69.2
12:15 p. m.	2	Lt. SE.	74.8	74.0	68.8
12:30 p. m.	2	Lt. SE.	74.4	74.0	68.8
12:45 p. m.	3	Lt. SE.	74.5	74.2	69.1
1:00 p. m.	4	Lt. SE.	74.0	73.9	68.3
1:15 p. m.	6		74.2	74.2	68.7
1:30 p. m.	7	Brisk N.	73.8	73.8	69.1
1:45 p. m.	5	Lt. E.	74.0	74.0	69.4
2:00 p. m.	4	Lt. S.	74.9	74.7	69.8
2:15 p. m.	3	W.	75.7	76.0	69.4
2:30 p. m.	2	W.	75.5	76.0	69.5
2:45 p. m.	2		76.0	77.0	70.0
3:00 p. m.	1	SE.	76.6	77.2	69.3
3:15 p. m.	2	SE.	76.2	76.4	69.8
3:30 p. m.	2	SE.	76.2	76.0	69.0
3:45 p. m.	2	SE.	76.0	76.0	69.3
4:00 p. m.	1	SE.	76.0	76.0	68.8
4:15 p. m.	2	E.	75.8	76.0	68.2
4:30 p. m.	3	None.	76.0	76.2	69.0
4:45 p. m.	5	N.	75.6	76.7	68.7
5:00 p. m.			75.5	76.8	68.6

In reference to this table Professor Carpenter writes to the Editor as follows:

At different times we have carried on observations throughout the twenty-four hours on the evaporation tanks, measuring the temperature at the surface, and at one foot below the surface. One of the most marked results was that the average temperature, as determined by observations at twelve hours' interval, was less than the true average by several degrees. The increase in temperature during the day at the surface is quite rapid, and the surface temperature becomes much warmer than the water below the surface. On cooling, however, convective currents form, and the whole mass of water practically cools together.

I had observations carried on at hourly intervals for several days, at the surface and one foot below, which showed this fact clearly. For the last three or four years I determined the average temperature from the maximum and minimum temperatures instead of from the observations at 12-hour intervals, as had been done before.

#### CLIMATOLOGY.

In a recent letter from Mr. R. DeC. Ward, of Harvard University, into whose hands Prof. William M. Davis has recently resigned his classes of instruction in meteorology, Mr. Ward says:

I am interested in your note on page 168 on the use of the word climatology. I quite agree that those who study this subject from the botanic or agricultural point of view should use some such compound word as agricultural or botanic climatology. The word climatology alone means what we may describe as general climatology. In my own studies, which concern chiefly the human side of climatology, i. e., the relations of climate and man, I have adopted the compound word anthro-climatology (Science, November 20, 1896, pp. 749-750). It seems to me that this side of climatology is so special that it should not be designated as climatology pure and simple, any more than the agricultural or botanic side of climatology should be so designated.

#### BLUE HILL OBSERVATORY.

The following statement by the Editor in the MONTHLY WEATHER REVIEW for December, 1897, page 541, describing the meteorological stations of Harvard University, "By an arrangement with the Park Commissioners of the city of Boston, the upper portion of Blue Hill was purchased in 1875, and transferred to the care of Harvard Observatory. This hill is about eight miles south of the observatory," \* \* \* contains an unfortunate typographical error, lately discovered by the Editor, and included in the corrigenda published in the proper place in the current number of the MONTHLY WEATHER REVIEW.

Meanwhile, Mr. Rotch, Director of the Observatory, has, independently, called our attention to this error, and furnishes the following accurate brief historical note on the relations between the Harvard and Blue Hill observatories:

The Blue Hill Meteorological Observatory was established by A. Lawrence Rotch in 1885 upon Great Blue Hill, 12 miles south of Harvard Observatory and several miles outside the limits of the city of Boston. About 60 acres of land on Blue Hill were subsequently purchased by Mr. Rotch to guard his observatory against encroachment. In 1893 the Blue Hills were taken by the Commonwealth of Massachusetts for a public reservation, and although the land owned by Mr. Rotch was paid for, the observatory was allowed to remain. In order to insure the continuance of the observations under invariable conditions of exposure, the land upon which the observatory stands and immediately surrounding was, at Mr. Rotch's request, leased by the Commonwealth to Harvard College in 1896 for ninety-nine years. The expense of maintaining the observatory, which now exceeds \$4,000 a year, continues to be paid by Mr. Rotch, but the cost of publishing the observations and investigations, annually or oftener, since 1887, in the Annals of the Astronomical Observatory of Harvard College, is shared by the Harvard Observatory.

#### INSURANCE AGAINST DROUGHT.

The Editor has received from Mr. Blythe, Weather Bureau observer at Phoenix, Ariz., a published article, by Mr. Chas. W. Pugh, advocating the insurance of crops and other property against destruction by drought. He states that there are several forms of insurance for live stock, crops, and other farm products; they are insured against fire, water, hail, lightning, hot winds—why not against droughts? The amount of injury and the chance of injury from drought can easily be ascertained by the study of local statistics during the past twenty-five years. The insurance company will have to give an exact definition of drought and establish a rate of insurance. The policy holder will have to prove that a given injury was really due to a drought.

This new feature of insurance seems perfectly feasible, but it would at the present time not be possible to carry out one of the items suggested by Mr. Pugh, viz, that the Weather Bureau shall make a general prediction of the coming season so that the farmers in any locality may know whether it is worth while to insure against drought as predicted for a given season. There are two objections to this feature: First, that the Weather Bureau has not attempted to make seasonal predictions, much less scored any great success therein. Second, that when it does do this successfully then the insurance companies will make nothing and, therefore, quickly be broken up, since their customers will patronize them only when they are sure that droughts are coming.